

**Amendments to the Claims:**

This listing of claims will replace all prior listings of claims in the application.

**1. (original).** An illumination apparatus comprising:

an inner-surface reflecting type integrator;

an optical system for directing a beam from a light source to a portion of incidence of said inner-surface reflecting type integrator;

an wave-front splitting type integrator;

an image-forming optical system for arranging the portion of incidence of said inner-surface reflecting type integrator approximately conjugate with a portion of incidence of said wave-front splitting type integrator, and for directing a beam from said beam mixer to said wave-front splitting type integrator; and

an irradiating optical system for superimposing multiple beams from said wave-front splitting type integrator on a plane to be irradiated, wherein a stop is provided at or near the portion of exit of said inner-surface reflecting type integrator.

**2. (original).** An illumination apparatus according to claim 1, wherein said inner-surface reflecting optical integrator reflects at least a part of incident light with an internal surface of said inner-surface reflecting optical integrator, and for forming a surface light source on or near the plane of exit of said inner-surface reflecting optical integrator.

**3. (original).** An illumination apparatus according to claim 1, wherein said wave-front splitting type integrator is a lens array for splitting a wave front of incident light, and for forming multiple secondary light sources on or near the portion of exit of said wave-front splitting type integrator.

- 4. (original).** An illumination apparatus according to claim 1, wherein said stop is a mechanical aperture stop.
- 5. (original).** An illumination apparatus according to claim 1, wherein said stop is made of a light shielding material applied onto the portion of exit of said inner-surface reflecting type integrator.
- 6. (original).** An illumination apparatus according to claim 1, wherein said stop is made of a multi-layer film vapor-deposited onto the portion of exit of said inner-surface reflecting type integrator.
- 7. (original).** An illumination apparatus according to claim 1, wherein said stop is made of a metallic film vapor-deposited onto the portion of exit of said inner-surface reflecting type integrator.
- 8. (currently amended).** An illumination apparatus according to claim ~~1-7~~ **1**, wherein said image-forming system is a zoom optical system.
- 9. (currently amended).** An illumination apparatus according to claim ~~1 or 8~~ **1**, wherein the portion of exit of said inner-surface reflecting type integrator has a polygonal shape, and said stop has an aperture for correcting  $\sigma$  anisotropy.
- 10. (original).** An illumination apparatus according to claim 9, wherein said stop has an approximately circular aperture.
- 11. (cancelled).**
- 12. (original).** An illumination apparatus comprising;
- an inner-surface reflecting type integrator including a portion of exit with an n-gonal shape where n is a natural number;
- a wave-front splitting type integrator;

a zoom optical system for projecting an image of the portion of exit of said inner-surface reflecting type integrator, onto a portion of incidence of said wave-front splitting integrator; and

an irradiating optical system for superimposing multiple beams from said wave-front splitting integrator on a plane to be irradiated, wherein a stop having an approximately circular aperture is provided at or near the portion of exit of said inner-surface reflecting type integrator.

**13. (cancelled).**

**14. (original).** A projection exposure apparatus comprising:

an illumination apparatus for illuminating a mask located on a plane to be illuminated; and

a projection optical system for projecting a pattern on said mask onto a wafer, wherein said illumination apparatus comprising:

an inner-surface reflecting type integrator;

an optical system for directing a beam from a light source to a portion of incidence of said inner-surface reflecting type integrator;

an wave-front splitting type integrator;

an image-forming optical system for arranging the portion of incidence of said inner-surface reflecting type integrator approximately conjugate with a portion of incidence of said wave-front splitting type integrator, and for directing a beam from said beam mixer to said wave-front splitting type integrator; and

an irradiating optical system for superimposing multiple beams from said wave-front splitting type integrator on a plane to be irradiated, wherein a stop is provided at or near the portion of exit of said inner-surface reflecting type integrator.

**15. (original).** A projection exposure apparatus comprising:

an illumination apparatus for illuminating a mask located on a portion to be illuminated; and

a projection optical system for projecting a pattern on said mask onto a wafer,  
wherein said illumination apparatus comprising:

an inner-surface reflecting type integrator including a portion of exit with an n-gonal shape where n is a natural number;

a wave-front splitting type integrator;

a zoom optical system for projecting an image of the portion of exit of said inner-surface reflecting type integrator, onto a portion of incidence of said wave-front splitting integrator; and

an irradiating optical system for superimposing multiple beams from said wave-front splitting integrator on a plane to be irradiated, wherein a stop having an approximately circular aperture is provided at or near the portion of exit of said inner-surface reflecting type integrator.

**16. (cancelled).**

**17. (original).** A device fabrication method comprising the steps of:

projecting a pattern on a mask onto a wafer by using a projection exposure apparatus; and

developing said wafer to which said pattern was transferred,

wherein said projection exposure apparatus comprising:

an illumination apparatus for illuminating a mask located on a plane to be illuminated; and

a projection optical system for projecting a pattern on said mask onto a wafer,

wherein said illumination apparatus comprising:

an inner-surface reflecting type integrator;

an optical system for directing a beam from a light source to a portion of incidence of said inner-surface reflecting type integrator;

an wave-front splitting type integrator;

an image-forming optical system for arranging the portion of incidence of said inner-surface reflecting type integrator approximately conjugate with a portion of incidence of said wave-front splitting type integrator, and for directing a beam from said beam mixer to said wave-front splitting type integrator; and

an irradiating optical system for superimposing multiple beams from said wave-front splitting type integrator on a plane to be irradiated, wherein a stop is provided at or near the portion of exit of said inner-surface reflecting type integrator.

**18. (original).** A device fabrication method comprising the steps of:

projecting a pattern on a mask onto a wafer by using a projection exposure apparatus; and

developing said wafer to which said pattern was transferred,

wherein said projection exposure apparatus comprising:

an illumination apparatus for illuminating a mask located on a plane to be illuminated; and

a projection optical system for projecting a pattern on said mask onto a wafer,  
wherein said illumination apparatus comprising:  
an inner-surface reflecting type integrator including a portion of exit with an n-  
gonal shape where n is a natural number;  
a wave-front splitting type integrator;  
a zoom optical system for projecting an image of the portion of exit of said inner-  
surface reflecting type integrator, onto a portion of incidence of said wave-front splitting  
integrator; and  
an irradiating optical system for superimposing multiple beams from said wave-  
front splitting integrator on a plane to be irradiated, wherein a stop having an approximately  
circular aperture is provided at or near the portion of exit of said inner-surface reflecting type  
integrator.

**19. (cancelled).**